

**What is claimed is :**

1           1. A controller employed in a data recorder to control interruption and restart of  
 2     recording data, wherein the data recorder records on a recording medium data stored in a  
 3     buffer memory by emitting a laser beam against the recording medium, the laser beam  
 4     being generated at a high level and a low level, wherein the laser beam at the relatively  
 5     high power level forms a recording pit on a recording layer of the recording medium and  
 6     the laser beam at the relatively low level does not form a recording pit on the recording  
 7     layer of the recording medium, the controller comprising:

8           a buffer underrun determination circuit for determining whether or not the buffer  
 9     memory is in a state in which buffer underrun may occur based on the amount of data  
 10    stored in the buffer memory;

11          an address memory for storing at least one of an address of the recording medium  
 12    and an address of the buffer memory when data recording on the recording medium is  
 13    interrupted, each address indicating a location of data when the recording interruption  
 14    occurred;

15          a synchronizing circuit for sequentially reading the data recorded on the recording  
 16    medium prior to the recording interruption and the data stored in the buffer memory prior  
 17    to the recording interruption and synchronizing the recorded data and the stored data  
 18    based on a synchronizing signal of a subcode;

19          restart circuitry for restarting data recording on the recording medium based on  
 20    the address stored in the address memory and;

21          interrupt control circuitry for interrupting data recording if the laser beam is  
 22    generated at the relatively low power level when the buffer underrun determination  
 23    circuit determines that the amount of data in the buffer memory may become null and  
 24    cause the buffer memory to become empty.

1  
 2           2. The controller according to claim 2, wherein the data includes synch pattern  
 3     data, the laser beam is generated at the relatively low power level and the relatively high  
 4     power level in accordance with the synch pattern data, and the interrupt control circuit

5 interrupts data recording when the laser beam is generated at the relatively low power  
6 level in accordance with the synch pattern data.

7  
8 3. The controller according to claim 2, wherein the data is recorded in the  
9 recording medium in sector units, each sector including sector address data, and wherein  
10 the address memory stores the sector address data where the recording interruption  
11 occurred.

12  
13 4. A controller for a data recorder, wherein the data recorder records data on a  
14 recording medium by emitting a laser beam against the recording medium, the controller  
15 comprising:

16 a buffer underrun determination circuit for determining whether or not the buffer  
17 memory is in a state in which buffer underrun may occur based on the amount of data  
18 stored in the buffer memory;

19 a laser drive circuit, which controls the power level of the laser beam; and  
20 an interrupt control circuit for continuing recording when the buffer memory is in  
21 a state in which buffer underrun may occur and interrupting the recording operation when  
22 the laser beam is generated at the low power level.

23  
24 5. A method for interrupting data recording in a data recorder to prevent the  
25 occurrence of a buffer underrun error, wherein the data recorder records data on a  
26 recording medium by emitting a laser beam against the recording medium, the method  
27 comprising:

28 determining whether or not a buffer memory of the data recorder is in a state in  
29 which buffer underrun may occur based on the amount of data stored in the buffer  
30 memory;

31 continuing recording when a predetermined state is detached; and  
32 interrupting the recording operation when the buffer memory is in a state in which  
33 buffer underrun may occur and the laser beam is generated at the low power level.

35           6. A method for interrupting and restarting data recording in a data recorder to  
36 prevent the occurrence of a buffer underrun error, wherein the data recorder records on a  
37 recording medium data stored in a buffer memory by emitting a laser beam against the  
38 recording medium, the method comprising:

39           determining whether or not the buffer memory is in a state in which buffer  
40 underrun may occur based on the amount of data stored in the buffer memory;

41           interrupting data recording if the laser beam is generated at a low power level  
42 when the buffer memory is in the state in which buffer underrun may occur;

43           storing in an address memory an address of the recording medium when data  
44 recording on the recording medium is interrupted, the address indicating a location of  
45 data when the recording interruption occurred;

46           sequentially reading the data recorded on the recording in medium prior to the  
47 recording interruption; and

48           restarting data recording on the recording medium based on the address stored in  
49 the address memory.